

6-5: Completing the Square

Warmup: Rewrite in standard form.

1. $y + 4 = 3(x + 1)^2$

2. $y - 1 = 2(x - 4)^2$

Inquiry: Can we switch from standard form to vertex form?

An important part of the vertex form: $(x - h)^2 \leftarrow$ A binomial square. Expand this.

The expanded binomial square is known as a perfect square trinomial (we squared something, so it's a perfect square, and it has three terms, making it a trinomial).

Theorem (Completing the Square):

Example 1: Rewrite $y = x^2 + 18x + 90$ in vertex form.

Let's take a look at this process again:

Example 2: Rewrite $y = x^2 - 11x + 4$ in vertex form.

Example 3: Rewrite $y = 3x^2 - 12x + 1$ in vertex form.

Notice: When $a \neq 1$, we need to factor out a from both terms that have an x .
Our perfect square trinomial is of the form $x^2 + bx + c$.

Try these on your own or at the board:

1. $y = 2x^2 + 8x + 5$

2. $y = 4x^2 + 36x + 14$

3. $y = x^2 - 10x + 10$

4. $y = 5x^2 + 70x - 9$

Homework:

“You must dare to disassociate yourself from those who would delay your journey... Leave, depart, if not physically, then mentally. Go your own way, quietly, undramatically, and venture toward trueness at last.” - Vernon Howard